

**ABSTRACT**

The invention relates to the detection, identification and diagnosis of bacteria in samples in general and in particular in clinical samples such as blood, urine, saliva, cerebrospinal fluid that are taken from patients that are possibly infected with a, as yet unknown, possibly pathogenic bacterium, or during follow-up diagnostic testing to for example evaluate therapeutic measures that have been taken so far to treat the disease. The invention provides a method for detecting or identifying a bacterium suspected of being present in a sample comprising testing said sample by Gram-staining and testing said sample with a probe according to an *in situ* hybridization protocol selected on the basis of the outcome of said Gram-staining. The invention also provides probes for use in said method.